# Recurrent Chronic Bullous Disease of Childhood in a Male Child: A Case Report


## Abstract

**Background:** Chronic Bullous Disease of Childhood (CBDC) is a rare autoimmune blistering disorder characterized by linear deposition of IgA along the dermo-epidermal junction which presents with annular vesiculobullous lesions in children.

**Case Report:**We presented a case of a four-year-old male child who developed recurrent generalized pruritus followed by blistering,over a period of seven months.He was previously treated with intravenous steroids with temporary improvement but relapsed after discontinuation.On examination, generalized itchy,painful,fluid-filled blisters on an erythematous base, arranged in an annular("string of pearls")pattern was observed. The patient was treated with oral dapsone(12.5 mg/day) after testing negative for G6PD deficiency,topical steroids and antihistamines.Marked improvement was seen within two weeks, with resolution of lesions with residual hyperpigmentation.

**Conclusion:**CBDC should be considered in the differential diagnosis of generalized vesiculobullous eruptions in children.Early recognition and prompt treatment with dapsone leads to rapid improvement and prevents complications.


## Introduction

Linear IgA bullous disease (LABD) is a very rare autoimmune blistering condition[1,2] that affects both adults and children but may affect newborn with a worse prognosis. No gender or ethnicity has been found, with an incidence of approximately 0.2-2.3 cases per million/year. The condition is known as Chronic Bullous Disease of Childhood (CBDC) in children and is higher in prevalence in Asia, North Africa and South Africa.

Linear IgA Disease is usually idiopathic, but skin traumas, drugs, infections and cancers can be inducers of this condition. Infections such as Salmonella, Epstein Barr virus infections, Streptococcus group A,viral hepatitis, post-streptococcal glomerulonephritis, beta-hemolytic streptococcal throat infections, upper respiratory tract infection, vaccinations, and quadrivalent human papillomavirus vaccine (qHPV) can trigger CBDC. The infective agents cantrigger Linear IgA bullous disease as a result of an immunologic reaction involving IgA antibody.Drug-induced CBDC may be caused by drugs like amoxicillin, minocycline, and vibramycin which stimulate the immune system and produces IgA antibody in susceptible patients.[2] The disease is

characterized by linear deposition of IgA antibodies along the basement membrane zone, resulting in subepidermal blister formation.[1,2,3] The lesions of CBDC is characterized by clear or serum-filled vesicles or blisters on normal or erythematous base skin which started from the abdominal and perioral areas. The face, mouth, eyes, hands and feet may also be involved. The hallmark clinical feature is the “string of pearls” or “crown of jewels” that is appearance of annular vesicles.

The diagnosis of CBDC is developed on clinical ground (presence of “string of pearls” or “crown of jewels”), histopathological, and direct immunofluorescence (DIF).[2] Systemic Dapsone is first-line treatment for chronic bullous disease of childhood but severe adverse effects like methemoglobinemia and hemolytic anemia, which is high-risk in patients with G6PD deficiency.[4]

This case highlights a recurrent episode of CBDC in a child, emphasizing the importance of early diagnosis, differential consideration and the role of dapsone as first-line therapy.

## Case Report

A four-year-old male child was presented to the Dermatology outpatient Department at Naimat Begum/Hamdard University Hospital, Karachi on August 2025 with complain of itching and blisters for the last four days. According to the mother, the child was previously healthy until seven months prior when he developed generalized itching followed by blisters, for which he was hospitalized under the pediatric department. The blisters started from the hands and feet, rapidly spreading all over the body within two days. The blisters were painful, contained clear serous fluid and arranged in an annular pattern. Blisters ruptured within a day, leaving erosions which was same size as the size of blister that healed with hyperpigmentation. He was unresponsive to broad-spectrum antibiotics (tazobactam, vancomycin, meropenem) but improved after receiving intravenous steroids. The child was discharged on oral steroids and antihistamines but was lost to follow-up for seven months. He re-presented with a similar episode of generalized itching and blistering in skin OPD. The child was born full-term via elective LSCS at 36 weeks gestation. He was top-fed,fullyvaccinated with normaldevelopmental milestones. Past hospitalization for similar skin condition was 6-7 months ago. Surgical history, known drug or food allergies was unremarkable. No family history of autoimmune or any dermatological diseases.He had decreased

appetite, disturbed sleep due to itching, pica for sand and paint was positive. He was on antihistamines and systemic corticosteroid since last seven months.

Examination showed a pale uncomfortable child, oriented to time, place, and person. Pulse:150/min, R/R: 40/min & afebrile. Skin examination showed multiple round clear-fluid-filled blisters on an erythematous base, distributed over the trunk, limbs, and face, arranged in annular (“string of pearls”) pattern (Diagnostic sign). Erosions and hyperpigmentation were also noted (Fig 1). There is no mucosal, nail, or scalp involvement.Cardiovascular respiratory, abdominal and neurological examination was unremarkable. Lab investigation showed Hemoglobin: 7 g/dL(Normal range HB: 10-14 g/dl) (on admission); 11.7 g/dL (after transfusion during hospitalization) while serum urea, creatinine and electrolytes were normal (Table 1). G6PD deficiency was negative (safe for dapsone therapy). Systemic dapsone is used as first-line treatment for CBDC but the common adverse effects are methemoglobinemia and hemolytic anemia, with high risk in patients with G6PD deficiency, so to rule out G6PD Deficiency test is made sure to be negative before starting Dapsone therapy. Oral Dapsone 12.5 mg/day, topical corticosteroid, soothing lotion, antihistamines and iron supplements were started. Transfusion of250mL packed cell volume (PCV) was done for anemia correction during hospitalization. Marked improvement was seen after two weeks, with drying of blisters and healing with hyperpigmentation (Fig 2). He was advised for a regular follow up after two weeks.

| Parameters | Patientsvalues | ReferenceRange |
|---|---|---|
| Hemoglobin | 7g/dl | 10-14g/dl |
| HemoglobinAftertransfusion | 11.7g/dl | 10-14g/dl |
| TotalLeukocyteCount | 11x10⁹/L | 4-10x10⁹/L |
| Platelets | 400×10⁹/L | 150-410x10⁹/L |
| Urea | 19mg/dL | 10.7-38.5mg/dl |
| Creatinine | 0.4mg/dL | 0.1-0.7mg/dl |
| SerumSodium | 142mmol/L | 136-145mmol/L |
| SerumPotassium | 4.4mmol/L | 3.5-5.0mmol/L |
| SerumChloride | 100mmol/L | 98-107mmol/L |
| SerumBicarbonate | 24mmol/L | 22-32mmol/L |
| G6PD | Negative | - |

**Table 1: Lab investigation**

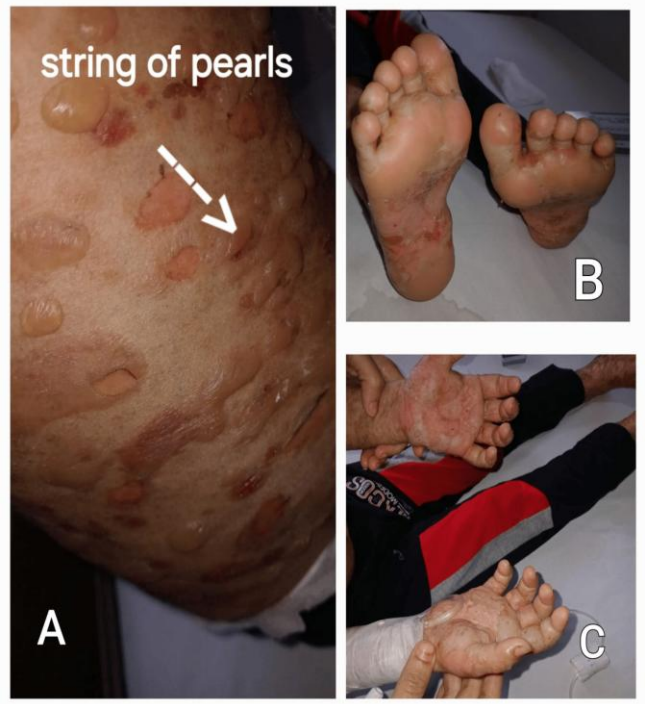


**FIGURE 1:**Before Treatment (A) showed string of pearls/cluster of jewels on the trunk of the child (B) Vesicles/blisters and erosions on soles (C) Vesicles/blisters and erosions on palms.

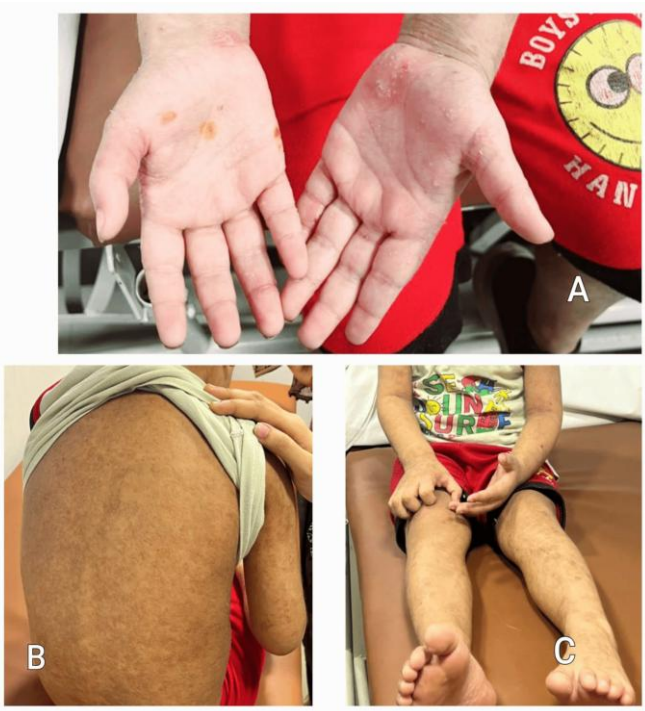


**FIGURE 2:** After Treatment (A) Healed lesions on the palms (B)Healed lesions with hyperpigmentation on the trunk of child (C) Healed lesion on the legs and soles.

## Discussion

Linear IgA disease is a very rare autoimmune blistering condition in which blister formation occurring in the skin/mucous membranes of the mouth, conjunctivae and genital mucosae. LABD exhibits a bimodal age distribution, with incidence peaks in the second and sixth decades of life, and shows a female predominance.[5]
Linear IgA disease can also be called chronic bullous disease of childhood (CBDC) when occurring in children and linear IgA disease when in adults. Triggers include infections, medications (notably vancomycin, NSAIDs, captopril, phenytoin, Sulfonamides, Amiodarone, Furosemide, Cephalosporins, Ciclosporin, Trimethoprim + Sulphamethoxazole, Glibenclamide, Lithium, Penicillins), Sodium hypochlorite (bleach) and autoimmune conditions like Inflammatory Bowel Disease or Rheumatoid arthritis.[6,7,8] In children, it may be found anywhere on the body usually on the lower abdomen, thighs, and groin as in this case while the face, limbs, and trunk are more commonly involved in adults.

It may present with oval or round vesicles filled with clear fluid or bullae, which may arise from normal, red patches of skin typically arrange in rings and new blisters arise around an existing blister in a ring form known as the ‘string of beads’ sign in children

which was seen in our patient. Groups of small blisters is known as ‘crown of jewels’ or ‘cluster of jewels’ in children and it was present in our case (Diagnostic sign).[6,7]

Mucosal involvement may occur, although absent in this case. Diagnosis is confirmed by Direct immunofluorescence (DIF) showing linear deposits of IgA at the dermo-epidermal junction. In its patho-mechanism, the target antigen is 97-kDa or 120-kDa proteolytic fragment of BP-180 extracellular domain which bound with IgA antibodies.[8] In patients with linear IgA, antigens are present beneath the hemidesmosome or just on the lamina densa or beneath it. On histopathology, there are subepidermal blisters and mild upper dermal inflammatory infiltration. The direct immunofluorescence (DIF)of the perilesional area showed linear deposits of IgA at the basement membrane zone.[9,10,11] Usually, in children of CBDC oral dapsone remains the drug of choice[11] in a dose of 1~2 mg/kg per day and shows rapid improvement within 2-3 days of initiation along with topical steroids or tacrolimus[11] and the dose increases at weekly intervals until the symptoms are controlled, however maximum dose should not exceed 3~4 mg/kg per day.[9]In resistant cases, systemic steroids,[11] tetracycline, flucloxacillin, erythromycin, colchicines, nicotinamide, ciclosporin, methotrexate, azathioprine, mycophenolate or rituximab and IVIG have responded successfully.[7]
The prognosis in children is excellent, with spontaneous remission typically within 2-4 years (range, 2.1-7.9 years).
Lesions of the mucous membranes heal with scarring. Desquamative gingivitis may lead to damaged teeth. Ocular LABD may progress into blindness.[7]

CBDC should be considered in recurrent vesiculobullous eruptions in children. Early diagnosis and treatment with dapsone can prevent unnecessary antibiotic exposure and reduce morbidity.

## Conclusion

CBDC should be considered in the differential diagnosis of generalized vesiculobullous eruptions in children. Early recognition and prompt treatment with dapsone lead to rapid improvement and prevents complications.


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I acknowledged all the work done by all authors.


## Conflict of Interest

There is no conflict of interest among all authors.

## Ethical Considerations

The research adhered to the ethical framework. Participant was comprehensively informed about the study's objective and the researcher's role, ensuring transparency. Anonymity and confidentiality were upheld.

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